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PROGRAMME BUDGET FOR THE BIENNIUM 1994-1995

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly the report of the Board of Auditors on the special audit of the Integrated Management Information System project, in accordance with Assembly decision 48/492 of 14 July 1994.

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ANNEX

Report of the Board of Auditors to the General Assembly on the special audit of the United Nations Integrated Management Information System, 18 November 1994

LETTERS OF TRANSMITTAL

Letter dated 18 November 1994 from the Chairman of the Board of Auditors to the Secretary-General of the United Nations

I have the honour to transmit to you the report of the Board of Auditors to the General Assembly on the special audit of the Integrated Management Information System project in accordance with General Assembly decision 48/492 of 14 July 1994, and the letter of transmittal to the President of the General Assembly.

(Signed) John BOURN
Comptroller and Auditor General
of the United Kingdom of
Great Britain and Northern Ireland
and Chairman
United Nations Board of Auditors

Letter dated 18 November 1994 from the Chairman of the Board of Auditors to the President of the General Assembly

I have the honour to present to you the report of the Board of Auditors to the General Assembly on the special audit of the Integrated Management Information System project in accordance with General Assembly decision 48/492 of 14 July 1994.

(Signed) John BOURN
Comptroller and Auditor General
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and Chairman
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I. INTRODUCTION

1. In its decision 48/492 of 14 July 1994, the General Assembly requested the Board of Auditors to conduct a special audit of the Integrated Management Information System (IMIS) project, bearing in mind the proposals contained in the sixth progress report of the Secretary-General, a/ to review the causes of delays and cost overruns and the method of procurement of goods and services and to analyse the ongoing expenditures and projected costs, including implementation costs, for the bienniums 1994-1995 and 1996-1997. Accordingly, the Board carried out a special audit during September-October 1994.

2. The special audit was carried out at United Nations Headquarters in New York, supported by surveys conducted by the Board at offices away from Headquarters in Addis Ababa, Bangkok, Geneva and Vienna.

3. The Board had earlier reviewed IMIS as part of its audit of the United Nations and included its findings and recommendations in its report for the biennium ended 31 December 1993. b/ The special audit supplemented this review to the extent necessary, in accordance with the request of the General Assembly.

4. The Board's observations on all matters contained in the present report were communicated to the Administration. The Administration has confirmed the facts on which the Board's observations and conclusions are based and provided explanations and answers to the Board's queries.

5. A summary of main findings and recommendations is reported in paragraphs 6-13. The detailed findings of the audit are reported in paragraphs 14-78.

II. OVERALL CONCLUSIONS

6. The Board was pleased to note that the shortcomings in the IMIS project identified in its previous audit of the project and reported to the General Assembly c/ have been addressed in the proposals contained in the Secretary-General's sixth progress report. a/ Taken as a whole, the Board's review of the proposals found that the corrective steps needed for the successful implementation of this very important project have been put in place. Further, we found that the general rationale for the revised estimates was soundly based. Nevertheless, the Board did identify some areas which require further attention and has made a number of detailed recommendations. It should also be noted that, as with all complex projects of this nature, it is not inconceivable that further difficulties may emerge as the project continues.

A. Summary of recommendations

7. The Board recommends that the following actions should be taken:

(a) In order to manage the project better and avoid further slippages in schedules:

(i) The implementation plan should be amplified to include a detailed allocation of resources to tasks and should be synchronized with the contractor's plans for software development, testing and other areas. The shortages and conflicts of United Nations staff resources identified as a result should be resolved expeditiously. An implementation coordinator in the IMIS development team and implementation teams in user departments should be prioritized for staffing (see para. 36);

(ii) The Steering Committee should devise a mechanism to speed up implementation-related decisions and actively monitor progress with reference to the implementation plan (see para. 38);

(iii) Offices away from Headquarters should be surveyed immediately to assess their technical infrastructure, the availability of electronic data processing skills related to IMIS and the extent and quality of data available for conversion to IMIS. The survey is essential for fine-tuning the implementation plan to suit the needs and capabilities of individual offices away from Headquarters (see para. 35);

(iv) The Electronic Services Division of the Secretariat should ensure that offices away from Headquarters procurement policy for personal computers is in harmony with their requirements of IMIS-compatible personal computers (see para. 73);

(b) In order to contain costs and keep the project within budget, the following are recommended:

(i) The project estimate should be increased by $1.6 million to $71.7 million to rectify discrepancies in the estimates incorporated in the sixth progress report (see paras. 42 and 43);

(ii) The estimates relating to implementation at offices away from Headquarters, except those relating to survey and installation tasks, should be revised after the proposed survey (see paras. 44 and 60);

(iii) The feasibility of assigning United Nations staff to maintenance and implementation tasks, especially for conducting training courses, in preference to contractual services, should be explored, as in-house implementation and maintenance support will be more cost effective than contractually supplied services. Further, implementation support staff should be identified, trained and positioned in time (see paras. 45 and 68);

(iv) User review of Release 3 (Accounting) development should be completed quickly and requests for changes monitored carefully to avoid further delays and costs. Similar action for Release 4 (Payroll) should be expedited. In particular, requirements of essential reports for all releases should be identified quickly to avoid structural adjustments to the software later which would be costly (see paras. 26, 27 and 30);

(v) The project development team should be allowed to concentrate on their activities by avoiding diversion to implementation-related activities. The Project Chief should be given adequate administrative support to monitor the software development contract closely, without detriment to the management of the IMIS development (see para. 78);

(vi) The task order method, incorporated in the second contract through Amendment 8, should be used for out-of-scope items and not for implementation-related activities (see para. 77);

(c) In order to realize the benefits from IMIS, the phasing out of existing systems which it is expected to replace should be planned and synchronized with its implementation (see para. 31).

B. Summary of findings

1. Causes of delays

8. The project, which was expected to be completed by December 1992, is now rescheduled for completion by mid-1997 owing to a variety of causes. The external design phase took longer than expected and as a consequence the selection of a contractor for the remaining phases of software development was delayed. The project slipped further when the second contractor assessed the time required for software development as 30 months instead of the original estimate of 24 months. In reality the time required for software development has further increased to 51 months owing to a number of factors, most notably, underestimation of the scope of the project, understaffing of the in-house development team, lack of adequate budget provision for implementation, diversion of both development team and contractor staff for implementation-related activities, delays by the United Nations and the contractor in discharging their contractual responsibilities and unexpected delays in converting data from existing systems (see paras. 14-24).

9. The schedule of implementation at offices away from Headquarters, which account for 77 per cent of the estimated transactions in IMIS, is not based on any detailed or current analysis of the tasks and effort required, and does not take cognizance of the differences in the technological maturity of the offices away from Headquarters (see paras. 33 and 34).

2. Causes of cost overrun

10. The project cost estimate has now been revised from $34.9 million to $70.16 million. Several factors are responsible for the cost escalation. Many significant items such as training and other implementation costs had not been included in the original project estimate. Delays caused by understaffing the development and implementation teams also contributed to the cost escalation. Owing to non-availability of staff resources, the United Nations had to use contractor staff for implementation and maintenance activities at higher costs. Changes in software and changes in strategy relating to implementation at offices away from Headquarters and training also increased costs. The current project estimate includes maintenance costs which were not included in the original estimate; on the other hand, the project has been rescoped by dropping some of the functions. The current estimate is also understated by $1.6 million (see paras. 40-44).

11. Several activities, such as training the users, software maintenance at offices away from Headquarters and the help desk, have been provided for through contractors at a higher cost, assuming the worst-case scenario of non-availability of United Nations staff resources (see para. 67).

3. Method of procurement

12. Major procurement of goods and services for IMIS has been conducted in accordance with the prescribed procedures (see paras. 71-74).

13. There were eight amendments to the contract for software development, which increased the contract value from $17.0 million to $25.8 million. The major increases related to work that was outside the scope of the contract, implementation support and maintenance and compensation for delays. The contract amendment process is lengthy and on occasions succeeds rather than precedes the discharge of obligations being contracted. There were failures on the part of both parties to the contract in discharging contractual obligations that could have minimized "changes" and "out-of-scope work" as defined in the contract (see paras. 47 and 75-77).

III. DETAILED FINDINGS

A. Implementation of the project

14. The Board's earlier review of the IMIS project disclosed that it was largely a development project with no detailed planning for implementation, that the organizational structure needed for its timely and successful implementation had not been created and that the resources required for such a major project had been considerably underestimated. Further, implementation had suffered from lack of coordination, difficulty in the conversion of data from existing systems and other problems. The Board had, inter alia, recommended reassessment of the resources for implementing IMIS and suggested rescoping of the project. Some of the proposals contained in the sixth progress report of the Secretary-General are based on the outcome of the review of the Board. By and large, the Board's

review of the proposals show that the corrective steps needed for successful implementation of this important project have been taken.

B. Delays in implementation

1. Revised schedule

15. The General Assembly approved in December 1988 the implementation of IMIS over a three-and-a-half year period, by mid-1992, adapting the system used by the Food and Agriculture Organization of the United Nations (FAO) to suit United Nations requirements. In May 1989, the negotiations with FAO were abandoned and it was decided to develop a system customized for the United Nations. In November 1990, the Secretary-General reported to the General Assembly that the project was expected to be completed by December 1992 and become operational in 1993. However, according to the sixth progress report of the Secretary-General, the project is expected to be completed only by mid-1997.

2. Causes of delays

16. The Board noted that nearly six months had been lost in negotiating with FAO to purchase its system for adapting to United Nations requirements, before it was abandoned in May 1989. The first phase of software development, external design, had been delayed by over four months, until October 1990, as the study took longer than the projected six months. Although the delay in completing the external design impacted on the overall schedule of the project, this delay was understandable considering the volume of the work undertaken. Additionally, out-of-scope work was awarded to the contractor engaged for the external design, inter alia, to facilitate better interaction with offices away from Headquarters and the refinement of the external design. Although the final reports were produced only in March 1991, this additional time did not affect the schedule of the project as other concurrent activities were not disturbed.

17. The selection of the contractor for the remaining aspects of software development, internal design, programming conversion, etc. was expected to start by July 1990 after the completion of the external design and to be concluded in the last quarter of 1990. Notwithstanding the slippage in the external design phase, the Secretary-General reported to the General Assembly, in November 1990, that the project was expected to be completed on schedule (December 1992) by finalizing the selection of the second contractor in approximately three months, i.e., by February 1991. This did not happen and the selection of the contractor was completed only on 1 July 1991. This slippage of nearly six months in the selection of the contractor, largely caused by the delay in the completion of the external design phase, resulted in a corresponding delay in the software development.

18. The request for proposal for the contract for software development (issued on 1 February 1991) stipulated completion of the project by the end of 1993, including implementation in offices away from Headquarters. However, when the contract was signed on 9 August 1991, the project completion date was postponed to January 1994 for implementation at Headquarters and to July 1994 at offices

away from Headquarters, based on the detailed assessment of work, furnished by the contractor. At that point in time, the project completion date had slipped cumulatively by 25 months, from mid-1992 to July 1994.

19. In March 1992, the IMIS Steering Committee changed the strategy and decided to implement IMIS in five releases, (personnel management, staff entitlements and recruitment, accounting, payroll and budget formulation and world-wide data transmission), but did not envisage further change in the completion date for the project. However, by May 1993, the expected completion date had been shifted by a further six months to July 1994 for Headquarters and January 1995 for offices away from Headquarters. Release 1 was finally implemented at Headquarters in September 1993.

20. In January 1994, the second contractor reassessed the estimated hours for completing the other releases, based on the experience of developing and implementing Release 1, and requested modification of the contract to provide additional funding and an extension of time. In September 1994, the Committee on Contracts approved an amendment extending the contract up to October 1995 and providing for 42,712 additional work-hours. Through this amendment, 28,835 work-hours were also deleted from the contract to reflect the decision in June 1994 to rescope the IMIS project by dropping Release 5 and parts of Release 4.

21. Against the earlier projection of six months for complete implementation at all the offices away from Headquarters after implementation at Headquarters, the sixth progress report envisages implementation of Releases 1 and 2 at offices away from Headquarters between the third quarter of 1995 and the second quarter of 1996 and Releases 3 and 4 between the second quarter of 1996 and the second quarter of 1997. In effect, the time-frame for software development at Headquarters has been extended from 30 months to 51 months, while the time-frame for implementation at offices away from Headquarters has been revised from 6 months to 18 months.

3. Delays in software development

22. The Board further analysed the slippage in schedules in respect of software development. The Board noted that the United Nations had delayed accepting the deliverables produced by the second contractor, which, contractually, should be accepted within 15 days.

23. The Board noted also that several changes in the user requirements had resulted in 30,000 additional work-hours for the contractor for providing new or enhanced functionality, as determined with reference to the initial contract. These changes were necessitated largely by omissions during the definition of requirements and in the design specifications. The Board further noted delays in resolving issues relating to system enhancements or modifications arising from changes in user requirements owing either to work-pressure or to difficulty in resolving procedural issues. According to the contractor, the diversion of resources to implementation-related tasks resulting from the United Nations inability to provide staff resources in time also affected the schedules for

development of Releases 2 and 3, although the contractor had been compensated for 23,918 work-hours for implementation support.

24. While basically concurring with the analysis of the reasons for time overrun, the Administration pointed out, in regard to the changes in, and omissions in the definition of, user requirements and omissions in design specifications, that "it is normal that in a system of the size and complexity of IMIS, extra work be identified and omissions found" and added that "we also think that the actual lack of uniformity in procedures, lack of a global and integrated policy approach to issues in the Department and lack of systems enforcing consistent processing have led to the fact that it is only when the development of the system is already advanced that new requirements are identified".

4. Remedial measures

25. The Board noted several recent significant actions by the Administration to strengthen the implementation of the project such as rescoping of the project, rebudgeting of resources and a "war-room effort" for cleansing data. However, the Board believes that a few important aspects (see paras. 26-36) need attention and resolution to avert potential problems and further slippages.

26. The management and other reports required from Releases 2 to 4 have not yet been finalized and this poses a risk of the system not being able to produce the final output as required or requiring modification of predesigned input processes. The Administration stated that the majority of reports required for Release 3 had been identified and that it was "fully aware of the magnitude of the task in this area and this is undoubtfully one of the major areas where the analysis of requirements was the most deficient".

27. Several issues relating to modifications of, and enhancements to, Releases 2 and 3 were pending resolution. The Board was informed that all issues related to enhancements to Release 2 had been resolved.

28. The integration of the functions relating to procurement services, currently using a software package, is contingent on the availability of a new version of the software, and its subsequent purchase and installation. The contract for the new version of the software was expected to be signed by 31 October 1994 and the software scheduled to be delivered by 31 December 1994.

29. A review of the report facilities in IMIS showed that the user interface was very cumbersome and did not conform to IMIS standards. The Board, however, noted that the United Nations had completed the development of its own user-friendly reporting module to be incorporated in IMIS shortly.

30. The second contractor steeply revised the estimated hours for the development of the payroll module, from 8,067 hours to 14,016 hours, primarily on the grounds that the original requirements drawn up nearly three-and-a-half years ago would undergo revisions. The United Nations has provided for an additional coordinator and systems analyst on the development team, but it is important that the relevant user departments are also geared up to participate

in the user requirements specification and acceptance testing to avoid slippage in the schedule.

31. The staggered implementation of various releases at Headquarters and offices away from Headquarters has necessitated the continuance of some existing systems until the complete implementation of IMIS. For instance, the Integrated Personnel and Payroll System, the General Accounting System and the Treasury Information Processing System will have to continue to meet some of the information requirements of the United Nations. This involves staff resources to sustain existing systems, transfer of data between systems and maintaining consistency between IMIS and such systems. These additional tasks are likely to stretch United Nations staff resources even more. The Administration informed the Board that it was working towards discontinuing the maintenance of the Integrated Personnel and Payroll System as of June 1995 and that work was being undertaken to assess better the interface requirements for the other systems. The Board recommends that, in order to realize the benefits from IMIS, the phasing out of the existing systems, which it is expected to replace, should be planned and synchronized with its implementation.

32. The Board's earlier review had revealed that offices away from Headquarters were not well prepared for the implementation of IMIS. The Board, therefore, had then recommended that a schedule for implementing IMIS at offices away from Headquarters should be drawn up and that several preparatory activities that had large lead times should be prioritized and started in a phased manner.

33. Although the schedule and a broad strategy for implementation have now been formulated, the Board feels that the following factors should be managed properly to avoid slippage. The schedule for offices away from Headquarters, which account for 77 per cent of the estimated transactions in IMIS, has been determined largely on the basis of outdated information concerning the tasks and technical infrastructure. For example, information is not current concerning the availability of a site for installing the main servers, cabling for networking, potential users of IMIS and availability of sufficient numbers of terminals for all IMIS users.

34. Further, the strategy does not identify the staff resources needed at offices away from Headquarters for technical support, data collection, data conversion and cleansing and of the availability of users for training. The Board has not seen evidence to support the availability of adequate skilled staff resources at Headquarters to undertake the implementation missions to all offices away from Headquarters within the time-frame indicated in the sixth progress report. The software modification requirements for offices away from Headquarters identified in that report are only estimates for the installation of IMIS and do not cover the potential requirements for bridging IMIS with other systems that may have to be continued until IMIS is fully implemented and even beyond.

35. For implementation at offices away from Headquarters, the Board recommended that the initial survey mission should be completed as a priority and, based on the assessment of technical infrastructure and availability of data, personnel and skills, a detailed project report could be drawn up dealing, inter alia, with the scope of the work to be executed, the time-frame for implementation and

the financial and human resources needed to accomplish the project. That report could be the baseline for committing resources and monitoring progress. Needless to say, the report should be synchronized with plans and resource availability at Headquarters. The Administration agreed with the recommendation and clarified that surveys of three offices away from Headquarters were planned for completion by December 1994. The Administration also expressed its confidence in achieving the implementation of the system within the time-frame, as it believed that it was an objective assessment.

36. For implementation at Headquarters, the Board recommended that the United Nations implementation plan be synchronized with the second contractor's detailed work plan. The Board stressed the importance of identifying and assigning United Nations staff resources to the tasks in the implementation plan to facilitate early identification and resolution of resource conflicts. The development team should be left completely free to concentrate on development issues such as design issues, user acceptance, modifications, enhancements, etc., as delays in accepting deliverables and inadequate attention to such issues through preoccupation with implementation-related issues have immediate cost implications and carry the risk of costly modifications being required later. An implementation coordinator in the IMIS team and implementation teams in the user departments should be priorities for staffing. The Board also recommended that the data conversion and cleansing requirements for Releases 2 and 3 should be assessed in detail and firm deadlines set for their completion.

37. While agreeing with the recommendations, the Administration informed the Board that major progress had been made in the area, that it was still actively working on finalizing the plan at a more detailed level and that the Steering Committee would monitor the progress of work on the basis of the work plan. The Administration also clarified that it expected to resolve quickly the difficulties faced in the identification of resources available for implementation in the areas of human resources and support services.

38. Globally, the Board recommended that the IMIS Steering Committee devise a mechanism to speed up implementation-related decisions and actively monitor progress with reference to the implementation plan. The Administration asserted that the Steering Committee was committed to avoiding further delays in the implementation dates.

39. According to the Administration, major changes in the Organization and instability in the Department of Administration and Management had an impact on the project development. Had that new situation not developed, more emphasis and resources could have been placed on the project, thus reducing considerably the slippage that occurred.

C. Cost of the project

40. The General Assembly approved the implementation of IMIS at an estimated cost of $28 million at 1988 rates. The estimates were revised to $34.39 million in the programme budget for the biennium 1992-1993 and recently, in the sixth progress report to $70.16 million. For its analysis of cost overruns, including the ongoing expenditures and projected costs for the bienniums 1994-1995 and 1996-1997, the Board adopted the estimate in the 1992-1993 programme budget as the baseline, as it reflected the scope of the project more accurately than the estimate approved in 1988.

41. Between the 1992-1993 programme budget and the sixth progress report the cost increased by $35.77 million, an increase of 104 per cent, as shown below:

(Thousands of United States dollars)

	Programme budget 1992-1993	New estimate (sixth progress report)			Increase (decrease over programme budget 1992-1993)		Expenditure until 31 Dec. 1993
	Amount	Total	Project	Maintenance	Amount	Percentage	Amount
General temporary assistance	5 919.3	14 306.9	13 870.2	436.7	8 387.6	141.7	4 116.7
Travel of staff	567.3	2 593.1	2 593.1	0.0	2 025.8	357.1	395.9
Hardware	7 887.1	4 528.5	3 415.0	1 113.5	(3 358.6)	-42.6	1 288.3
Data processing services - software	1 885.0	2 907.6	2 409.9	497.7	1 022.6	54.2	859.9
Supplies	67.2	294.9	294.9	0.0	227.7	338.8	99.9
Communications	111.3	271.0	271.0	0.0	159.7	143.5	111.0
Training	415.8	5 516.7	5 516.7	0.0	5 100.9	1 226.8	1 077.3
Contractual services	17 536.8	39 744.1	32 809.2	6 934.9	22 207.3	126.6	19 062.6
Total	34 389.8	70 162.8	61 180.0	8 982.8	35 773.0	104.0	27 011.6

42. In assessing the cost overrun, it has to be noted that the current estimate should be treated as $71.7 million after rectifying discrepancies noticed by the Board. It is also to be noted that the estimate of $34.39 million in the 1992-1993 programme budget included $2.41 million under contractual services for functions now abandoned by rescoping the project. On the other hand, in respect of maintenance, the current estimate includes $3.61 million towards recurring expenditures and $5.37 million towards one-time expenditures, both of which were not incorporated in the 1992-1993 programme budget.

D. Major causes of cost overrun

1. Contractual services

43. The Board pointed out and the Administration agreed that on the basis of the work indicated in the sixth progress report, the estimate for contractual services should be increased by $1.6 million, from $39.74 million to $41.33 million.

44. The sixth progress report estimate includes $22.27 million for contractual services during 1994-1997, $11.09 million towards outstanding payments to the second contractor and the remaining $11.18 million towards other contractual services related mainly to implementation in offices away from Headquarters. The Board recommended that the estimates relating to implementation support and software modification at offices away from Headquarters be reconfirmed after the proposed survey. The Administration agreed to do so.

45. The estimate for maintenance activities is based on the assumption that these implementation-related activities would be performed through the contractor. The Board believes that, in the long run, these tasks are best handled in-house. While agreeing with the suggestion, the Administration stated that it would be in a better position to assess the real need after the survey at offices away from Headquarters and that, whenever possible, in-house staff resources would be used.

46. As regards the help desk, the Board felt that, being a recurring maintenance activity, this could be performed at a lesser cost by deploying United Nations staff. Indeed, the function was better discharged by persons familiar with the United Nations system. The Board was informed that although some of the activities would certainly be handled by United Nations staff after the completion of implementation, shortage of staff resources might force the use of additional assistance. The Administration agreed to study how the Board's suggestion could be implemented.

47. The value of the second contract increased from $17.01 million to $25.80 million after deleting certain items, valued at $2.41 million. The Board noted that the major increases in the contract related to work which was outside the scope of the contract ($5.38 million), implementation support and maintenance ($2.07 million) and compensation for delays ($3.57 million).

48. The out-of-scope items amounted to 46.5 per cent of the total work-hours provided for Releases 1 to 3. This very large increase arose on account of

changes to design specifications in order to improve the system or rectify design deficiencies, revision of data models, revision of report specifications, inadequate definition of user requirements at various stages of review, i.e., external design, internal design and unit testing, etc., and changes in the scope of training.

49. According to the Administration, the amount for out-of-scope expenditure had been maintained at a reasonable level justified by the complexity of the project. The Administration further stated that "in many cases, the development of the system has been the first opportunity for the Organization to look into its procedures. Many of the issues that required major out-of-scope expenditure, namely concerning technical cooperation activities, are related to the fact that the Organization did not, and in many cases still does not, have consistent policies and procedures. The scope of the project is also so broad that it is natural that new specifications be identified while the project progresses in its work".

50. The implementation support and maintenance relate to tasks such as supervising and coordinating the work of United Nations staff, direct assistance to users, assistance to and coordinating data conversion tasks performed by United Nations staff, assistance in data collection, modifying user profiles, providing an implementation manager, writing desk manuals (desk procedures), etc. Although these tasks were to be performed by United Nations staff members, the contractor was asked to assign staff for these tasks, at hourly rates, owing to "lack of human resources in the Organization".

51. The Board believes that general unpreparedness for the implementation of IMIS has resulted in this cost escalation which could have been avoided by mobilizing the staff resources needed. The Administration stated that the Department of Administration and Management did not have sufficient capacity during the period 1992-1994 to assign resources to IMIS-related activities owing to a reduction in posts, increased activities for peace-keeping missions, which required assignment of a high number of staff from the Department. According to the Administration the escalation in costs could have been only partially avoided through the hiring of additional temporary staff.

52. A part of the compensation for delays ($2.34 million) relates to compensation claimed by the contractor for additional costs resulting from a delay in acceptance of deliverables, extra efforts owing to changes in specifications and diversion of staff for implementation-related tasks. The remaining part ($1.23 million) relates to compensation for time-based management and administrative services claimed by the contractor for the extended period of the contract from January 1994 to October 1995. The compensation was determined after negotiations during which the contractor accepted 25 per cent responsibility for delays.

53. The Board believes that the entire compensation was an avoidable cost without value addition and such costs are bound to escalate with every postponement of the completion date. The Administration, however, stated that "the issue here again is related to the lack of resources the Organization could assign to the project for the period 1990-1994. Certainly the contractual costs could have been reduced but this reduction would have been offset to a large

extent by the fact that we would have needed to assign to the project team ... at least 18 to 20 additional staff for at least two years each, at an additional cost that would have been close to $3 million".

2. General temporary assistance

54. General temporary assistance has increased by $8.39 million. The increase has been caused by the strengthening of the development team, continuance of the development team for a longer period because of the extension of the project and staff required for implementation and maintenance tasks not provided for earlier.

55. The Board noted that the business area coordinators in the development team would be phased out in stages after the implementation of the releases for which they were responsible. As IMIS was an integrated system involving linkages between releases and between United Nations Headquarters and offices away from Headquarters, the Board recommended that it would be prudent not to disturb the business area coordinators in the development team until the full implementation of IMIS in all the offices away from Headquarters. The Administration stated that it would take note of the suggestion and reconsider it in the course of 1995 during the preparation of the 1996-1997 budget, taking into account the progress of work for implementation at offices away from Headquarters.

56. While noting the proposal to strengthen the project team by the addition of an implementation coordinator, a systems analyst exclusively for payroll and an administrative officer, the Board stressed the need to fill the posts expeditiously as any vacancy would lead to costly delays in the project. Besides the strengthening of the development team, the Board emphasized the importance of user departments identifying persons who would participate in user requirements specification and acceptance testing. Expressing its agreement, the Administration stated that it had already closely associated payroll staff in the design of other parts of the system.

57. The Board noted that the estimate in the sixth progress report did not include the cost of United Nations staff resources required for implementation at offices away from Headquarters, although their travel costs had been included, presumably because the resources would be released internally. In view of the importance of qualified resources for implementation at offices away from Headquarters the Board recommended that the availability of such resources within the time-frames indicated should be carefully considered. Concurring with the recommendation, the Administration stated that the issue would be carefully considered when the planning of missions was undertaken.

58. The sixth progress report did not deal with members of transition teams for offices away from Headquarters who would have to work with the regional coordinators and teams at United Nations Headquarters and who might have to be released from their regular activities during IMIS implementation. The Board was informed that "the situation in the offices away from Headquarters is still largely unknown. It is therefore extremely difficult to budget now for temporary assistance for these functions. We will, however, study ways for addressing this issue with the Advisory Committee on Administrative and

Budgetary Questions and the Fifth Committee so that the necessary adjustments can be made if the need arises".

59. Data cleansing had proved to be a major bottleneck for Release 1, leading to the repeated postponement of implementation and consequent cost overruns. The Board felt that, without a detailed estimate of data conversion and identification of United Nations personnel who would handle such tasks, it was difficult to derive assurance that that critical activity would be performed on schedule. The Administration stated that it had provided $540,000 for data entry, initiated advance action for data collection and cleansing at offices away from Headquarters based on the experience gained from Release 1 and that the majority of the data already resided at United Nations Headquarters. It was, however, clarified that some additional expenditures might be incurred, although that would be difficult to assess now.

3. Travel

60. Travel costs have increased by $2.03 million. The Board noted that the current estimates envisaged significant amount of travel by Headquarters staff ($1.06 million) and contractors ($1.09 million) to offices away from Headquarters for initial surveys of infrastructure and data, installation of software and implementation, including training. This accounts for about 83 per cent of the total travel budget, reflecting the under-estimation earlier. The Board appreciates the need for the visits envisaged, but is unable to endorse fully the estimate of $1.66 million relating to travel costs for the teams for implementation and training, as these are not based on any recent survey of the infrastructure or assessment of the number of potential users of IMIS. The estimate does not take cognizance of the differences in the technological maturity of the different offices away from Headquarters. The estimate therefore needs to be firmed up in due course.

4. Hardware

61. Hardware costs have been reduced by $3.36 million. The reduction is primarily a result of a decrease in hardware prices and the exclusion of users' personal computers from the IMIS budget on the grounds that the personal computers would be financed from the budget for acquisition or replacement of office automation equipment, although a number of extra servers are now contemplated for managing reporting requirements without degrading the performance of the system. The Board, however, noted that the 1988 estimates provided for $3.1 million for the terminals; the details of the hardware estimate in the 1992-1993 programme budget were not available.

5. Software

62. Software costs have gone up by $1.02 million. Nearly half of this increase ($497,700) represents provision for maintenance which had not been included in the 1992-1993 programme budget. A further increase of $800,000 is accounted for by a decision to use an inventory management software for purchasing functions and integrate it with IMIS instead of a custom development within IMIS; there has been a consequential reduction under contractual services. The Administration pointed out that owing to successful negotiations with vendors, the further increase in cost had been partially offset by lower purchase costs of other components.

63. A provision of $1.6 million has been made for hardware and software maintenance, neither of which was included in the 1992-1993 programme budget.

6. Training

64. Training costs have increased by $5.1 million. The estimate has gone up by 1,226.8 per cent, which clearly suggests earlier underbudgeting. In the 1988 estimates, training had been completely omitted. In the 1992-1993 programme budget, the main component of the estimate for training related to technical training. The increase now is explained by the enlargement of the scope as follows:

(a) Training development ($1,786,123), which includes developing a training strategy, training materials and a performance support facility through the second contractor;

(b) Delivering training to the users of IMIS ($3,730,577).

The Board is of the view that the failure to budget adequately for training was a glaring omission, considering the size and complexity of the project. The Board, however, noted that the training of users has been, and is proposed to be, done through contractors, whereas the second contract had envisaged only training of trainers.

65. The training estimate is based on the assumption that training in offices away from Headquarters will be imparted mainly through contractors travelling from New York and staying at each office away from Headquarters for eight weeks for Releases 1 and 2, and 10 weeks for Releases 3 and 4. The travel, daily subsistence allowance (DSA) and contractual costs for this are shown below:

(United States dollars)

Release	Contractor's cost	Travel	DSA	Total
1 and 2	967 680	101 360	235 200	1 304 240
3 and 4	1 512 000	126 700	367 500	2 006 200
Total	2 479 680	228 060	602 700	3 310 440

66. The Board believes that there is scope for economy. Deploying staff from Headquarters would eliminate, at least partially, contractor's costs and it may also be feasible since implementation at Headquarters precedes implementation at offices away from Headquarters and several users at Headquarters would already have been exposed to IMIS. Identifying persons in the respective offices away from Headquarters who can be trainers would reduce travel and DSA costs also; the cost of training them as trainers through the second contractor, as per the contract for Headquarters training, is relatively negligible. This would relieve pressure on Headquarters to find trainers and release them for long spells. Considering the long-term needs of IMIS, in particular long-term training requirement for new employees and the long lead-time available in the proposed schedule for implementation at offices away from Headquarters, the latter option seems the most logical to adopt.

67. The Board noted that as in the case of other activities like software maintenance and the help desk, the estimate for training had been prepared for the worst-case scenario, i.e., on the assumption that in-house resources would not be available even at Headquarters for training at offices away from Headquarters. The Board also noted that no recent reliable survey of potential users was available to estimate fairly the number of trainers and the total duration of direct training needed. The Board's own survey of four offices away from Headquarters revealed wide variations in estimates over time.

68. The Board believes that training must be in-house as far as possible, especially as IMIS is an ongoing project. Identifying staff at offices away from Headquarters, and associating them with implementation from the earliest stages would facilitate building up training resources and delivering training at lower costs. As IMIS has an elaborate performance support facility, the original strategy of training the trainers through a contractor still appears to be a more cost-effective option. This would also reduce the travel budget significantly.

69. As with offices away from Headquarters, the cost of training of users at Headquarters for Releases 2 to 4 has been estimated on the assumption that it will be imparted through contractors and is based on approximate numbers of users for Releases 3 and 4. The approximation seems reasonable, although the Board believes that identifying trainers and using the Staff Administration and Training Division at Headquarters to deliver training may be a more cost-effective and enduring arrangement.

70. While agreeing that the best approach for training might be to use in-house resources duly trained, whenever possible, the Administration felt that it might not be able to identify enough staff to be trained as trainers. The Board was further informed that "one of the major problems encountered for the implementation of Release 1 at Headquarters was the lack of availability of staff in the users' areas, and in the Office of Human Resources Administration in particular. The new estimates envisage the direct training of users in the event that we would not be able to identify enough staff to be trained as trainers". The Administration, however, emphasized that it was its firm intention to associate United Nations staff in the training process, especially at offices away from Headquarters, as much as possible.

E. Procurement of goods and services

71. The procurement of goods and services in respect of the IMIS project could be broadly classified as:

(a) Hardware and proprietary software;

(b) Services for technical advice, software development and other implementation and maintenance functions.

The Board reviewed the procurement of the major components.

1. Hardware and software

72. The major purchases of hardware related to the Hewlett-Packard servers for Headquarters and those of software related to Sybase and Pro-Kappa. The Board noted that the prescribed procedures for procurement had been followed.

73. The Board had earlier reviewed the procurement of personal computers at Headquarters and its findings were included in paragraphs 152 and 153 of the Board's report for the biennium ended 31 December 1993. b/ During the special audit of the IMIS project, the Board pointed out the importance of the Electronic Services Division ensuring uniformity in the procurement policy for personal computers at Headquarters and offices away from Headquarters, so that personal computers procured were IMIS-compatible. The Administration stated that it fully appreciated the need for standardization of the personal computers and that "this recommendation will be examined by the Electronic Services Division and possibly submitted to Technological Innovations Board for a decision before being communicated to all officers concerned".

2. Contractual services

74. The expenditure on contractual services includes payments relating to two major contracts for IMIS and a variety of contractual services covering technical advice, quality assurance, data entry and data conversion, etc. The Board examined the major components, i.e., the contract for external design and the contract for the remaining phases of software development. The Board was satisfied that both contracts had been finalized in accordance with United Nations regulations and procedures.

75. The Board also reviewed eight amendments to the second major contract and noted that the United Nations had, on several occasions, delayed acceptance of deliverables, leading to claims for compensation. The Board noted further that the contractor had not always discharged the contractual obligation to "conduct reviews of interim and final work products with United Nations participation" or "conduct structured walk-throughs of major deliverables with United Nations members of the IMIS team and user representatives" which could have minimized the "changes" and "out-of-scope work" as defined in the contract. The Administration stated that the majority of out-of-scope issues were identified through the walk-through of the external design of the system performed by the contractor for representatives of Headquarters and offices away from Headquarters, although the contractor did not conduct as many walk-throughs as included in the contractor's proposal. The Administration further clarified that that was one of the arguments used by the United Nations while negotiating the compensation for delays claimed by the contractor and which led the contractor to accept 25 per cent responsibility for the delays.

76. The Board noted that the contract amendment process was lengthy and had, on one occasion, been concluded after the completion of all the items of work contemplated and even after the disbursement of payments therefor.

77. Amendment 8 to the contract provided $1,495,000 for execution of work through a "task-order procedure" by which the IMIS Project Chief was empowered to issue a task order for executing work not yet identified and that that provision had been incorporated to enable execution of work without contractual amendments where such work could not be anticipated. While the Board believed that that might be necessary in the interest of timely execution of work, considering the lengthy contract amendment process, it recommended the creation of a mechanism to prevent the use of that provision for implementation-related activities that should appropriately be performed by United Nations staff. The Administration agreed to limit to the maximum extent possible the usage of these funds for implementation related activities.

78. The Board further recommended that, because of the potential for cost-escalation, the servicing of the contract should be given more attention by providing adequate administrative support to the IMIS Project Chief. The Administration agreed and stated that efforts were being made to fill the positions rapidly.

IV. ACKNOWLEDGEMENT

79. The Board wishes to express its appreciation for the cooperation and assistance extended by the Secretary-General of the United Nations, the Directors-General of the United Nations Offices at Geneva and Vienna, the Executive Secretaries of the Economic Commission for Africa and the Economic and Social Commission for Asia and the Pacific, their officers and members of their staff.

(Signed) John BOURN
Comptroller and Auditor General
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and Northern Ireland

(Signed) Osei Tutu PREMPEH
Auditor-General of Ghana

(Signed) Codanda Ganapathy SOMIAH
Comptroller and Auditor General
of India

Notes

a/ A/C.5/48/12/Add.1.

b/ Official Records of the General Assembly, Forty-ninth Session, Supplement No. 5 (A/49/5).

c/ Ibid., chap. II, paras. 105-133.